

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS

1. A construction block for use in the construction of elemental structures, the block comprising a body having a bottom surface, a top surface, end surfaces, an outer surface which forms part of an outer surface of a structure and an inner face; at least one formation on or in at least the inner face and/or at least one of the end surfaces which receive/s and retain/s at least one insulating element; wherein, the insulating element provides thermal insulation for a structure formed from said construction blocks.

2. A construction block according to claim 1 wherein the at least one insulating element comprises a prismatic body made from a material having insulating properties; wherein the element is secured to said block via said at least one formation.

3. A construction block according to claim 2 wherein each said insulating element provides a thermal and water barrier to at least one face of each said building blocks.

4. A construction block according to claim 3 wherein each formation comprises a recess which provides a key to secure each said element to the block.

5. A construction block according to claim 4 wherein the construction block is formed in a mould from a cementitious matrix.

6. A construction block according to claim 5 wherein the block includes a formation in a surface which accommodates a corresponding formation in said insert.

7. A construction block according to claim 6 wherein the insert engages an inner surface of the block via said formations.

8. A construction block according to claim 7 wherein the formations which allow engagement between a construction block and said element are opposite gender.

9. A construction block according to claim 8 wherein each said element engages adjacent blocks.

10. A construction block according to claim 9 wherein an insulating element engages an end of a first construction block and an opposing end of a second adjacent constructions block.

11. A construction block according to claim 9 or 10 wherein an insulating element engages an inner wall of a first block and an inner wall of an opposing block

12. A construction block according to any of the forgoing claims wherein each insulating element is substantially the same dimension as one dimension of one face of said block.

13. A construction block according to claim 12 wherein the insulating element has a larger dimension than an adjacent surface of said block.

14. A construction block according to claim 13 wherein the insulating element and block have corresponding dovetail formations.

15. A constriction block according to claim 14 wherein each insulating element is made from polystyrene.

16. A construction block according to claim 15 wherein an insulating element adjacent a block sits proud of a height dimension of said block.

17. A construction block according to any of the forgoing claims wherein the block is manufactured in a mould from a cementitious material including timber based aggregate.

18. A construction block according to claim 17 wherein each polystyrene insulating element is manufactured in a mould.

19. A construction block according to claim 18 wherein the at least one insulating element and block are integrally connected to form a composite building element.

20. An insulating element for use in a construction block for use in the construction of elemental structures, the block comprising: a body having a bottom surface, a top surface, end surfaces, an outer surface which forms part of an outer surface of a structure and an inner face; at least one formation on or in at least the inner face and/or at least one of the end surfaces which receive/s and retain/s at least one insulating element; wherein, the insulating element provides thermal insulation for a structure formed from said construction blocks.

21. An insulating element for a construction block according to claim 20 wherein the insulating element comprises a prismatic body made from a material having insulating properties; wherein the element is connected to the block via said at least one formation.

22. An insulating element for a construction block according to claim 21 wherein each said element provides a thermal and water barrier to at least one face of each building block.

23. An insulating element according to claim 22 wherein each formation in the construction block includes a recess providing a key to secure an insert to the block.

24. An insulating element according to claim 23 wherein the element is formed in a mould.

25. An insulating element according to claim 24 wherein the insulating element includes a formation which accommodates a corresponding formation in a surface in said block.

26. An insulating element according to claim 25 wherein the insulating element engages an inner surface of the block via said formations.

27. An insulating element according to claim 26 wherein the formations which allow engagement between a construction block and said element are opposite gender.

28. An insulating element according to claim 27 wherein each said insert engages adjacent blocks.

29. An insulating element according to claim 28 wherein an insert engages an end of a first block and an opposing end of a second adjacent block.

30. An insulating element according to claim 28 or 29 wherein, an insert engages an inner wall of a first block and an inner wall of an opposing block

31. An insulating element according to any of the forgoing claims wherein, an insulating element has one dimension substantially the same as one dimension of one face of said block.

32. An insulating element according to claim 31 wherein, the insert has a larger dimension than an adjacent surface of said block.

33. An insulating element according to claim 32 wherein the insert and block have corresponding dovetail formations.

34. An insulating element according to claim 33 wherein each insulating element is made from polystyrene.

35. An insulating element according to claim 34 wherein an insert adjacent a block sits proud of the height of said block.

36. An insulating element according to claim 34 wherein the polystyrene insulating element is manufactured in a mould.

37. A structure manufactured from building blocks comprising a body having a bottom surface, a top surface, end surfaces, an outer surface which forms part of an outer surface of a structure and an inner face; at least one formation on or in at least the inner face and/or at least one of the end surfaces which receive/s and retain/s at least one insulating element; wherein, the insulating element provides thermal insulation for the structure formed from a composite building element comprising said blocks and said insulating element.

38. An insulating element for use in the thermal insulation of a wall constructed from building blocks made from a cementitious material; wherein, said element approximates the size of at least one face of a building block with which the insulating element is used, wherein, the polystyrene insert is adapted for integral attachment with at least one said building blocks such that a composite building element comprising said element and at least one said blocks is formed..

39. An insulating element according to claim 38 wherein, the insulating element is made from a material selected from insulating materials such as a plastics material, a resin, polystyrene.

40. A composite construction element for use in the construction of an elemental structure; wherein, the composite element comprises a construction block and an insulating element made from a material having insulating properties; wherein, the insulating element is integrally attached to an inner face of the block to thereby provide a thermal and water barrier to at least one face of each said building blocks.

41. A composite building block including an insulating element wherein the element provides a thermal and moisture barrier to said block wherein, said composite is

prepared in a mould and the block is formed from a cementitious matrix; wherein said matrix is poured in said mould while said polystyrene element is in said mould; wherein the element and block mutually engage by opposing gender formations to form the composite block.

42. A composite construction block including an insulating element according to any of the foregoing claims wherein the block is either a rectangular cube, square cube, triangular cube, polygonal.

43. A method of construction of a composite construction block wall having an insulating layer; wherein the method comprises the steps of

- a) taking a mould capable of forming at least one building block;
- b) preparing a cementitious matrix for formation of said blocks;
- c) placing at least one insulating element into said mould at a predetermined location within the mould;
- d) pouring said matrix into said mould such that the matrix engages mould surfaces and at least one surface of said element;
- e) allowing said matrix to set for a predetermined period of time;
- f) removing said at least one block and said at least one element from said mould as a composite construction element.

44. A method according to claim 43 comprising the further step of constructing a wall from said composite construction blocks elements thereby producing a structure having increased insulating properties by virtue of said at least one insulating element.

45. A method of preparation of a structure formed from composite building blocks comprising a block and an associated insulating element connected to the block; the method comprising the steps of :

- a) placing a mould of predetermined dimensions on a base surface;
- b) placing at least one insulating element in said mould;
- c) mixing a matrix of cementitious material and pouring said material into said mould so that the material forms at least one block;
- d) allowing said at least one insulating element to engage said matrix so that said element forms a composite with said matrix;
- e) allowing said matrix to set for a predetermined period ;
- f) removing said composite element and matrix from said mould.

46. A method according to claim 45 comprising the additional step before placing said insulating element in said mould of providing means on the element to allow the element to key into said matrix upon setting of said matrix

47. A method according to claim 46 comprising the further step of forming at least one gender profile in the insulating element to enable engagement with a corresponding opposite gender profile formed in the block when the matrix is poured against the insulating element the block.

48. A method according to claim 47 wherein, the insulating element is made from a material selected from a plastics material, a resin or polystyrene.

49. An insulating element according to any one of the forgoing claims wherein the element is formed from a solid or flowable material selected from one or more of polystyrene, foaming polyurethane, foamed rubber, foamed concrete, vermiculite glued so as to make a board, fly ash also glued together, low density mineral products, organic inserts including glued low density sawdust so as to make a board, straw or other grass like materials, rice husks glued together into a board or matted insert.

50. A method of preparation of a structure formed from building blocks prepared in a mould; the method comprising the steps of :

- a) forming a cement or clay fired moulded block such that the finished block includes surface formations therein on at least one surface;
- b) taking at least two said blocks and placing said blocks so that said formations on said at least one surface of two said blocks are in spaced apart but opposing relationship to form a space formed therebetween;
- c) filling said cavity between said at least two blocks with a flowable material capable of filling said cavity;
- d) allowing said flowable material to set thereby creating a composite building element comprising said two blocks and said flowable material.

51. A method according to claim 50 wherein the flowable material is a foaming polyurethane or styrene or like product.

52. A method according to claim 51 wherein, the flowable material is preferably low density and fully penetrates the cavity formed between said blocks to form an insulating layer imparting to the building block insulating properties and a barrier to moisture.

53. A method according to claim 52 wherein two opposing bricks are placed with key profiles opposing each other and set to a predetermined width.

54. A composite construction element for use in the construction of an elemental structure; wherein, the composite element comprises first and second spaced apart construction blocks and an insulating element made from a material having insulating properties; wherein, the insulating element is integrally attached to an inner face of at least one said blocks to thereby provide a thermal and water barrier to at least one face of each said building blocks.

55. A composite element according to claim 54 wherein, the insulating element protrudes beyond one end of each said blocks forming a mating tongue and is terminated short of an opposite end of each said blocks.

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